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SOCIAL STRUCTURE AND INTERPERSONAL COMMUNICATION

OTTO N. LARSEN AND RICHARD J. HILL

ABSTRACT

The flow of information is related to the changing structure of group relations in two studies of small communities consisting of boys in a summer camp. In these situations message "starters" were selected according to their position in the social structure. The findings suggest a number of ways in which the spread of information may be guided by considerations of social status.

The process of sharing information is an integral part of social interaction. Social psychologists have suggested that, when a number of people come together for the first time, the communicative process tends to reflect influences immediate to the situation, the task, and the personal characteristics of the interacting individuals. No particular communication *pattern* emerges. However, as groups develop a stabilized structure, it is believed that the lines of communication become increasingly predictable in terms of the reciprocal relationships of the members. In discussing this process, Sherif contrasts communication in "transitory togetherness situations" with that in "stabilized group structures," noting that the "formation of a status hierarchy tends to polarize communication in the direction of the upper status levels."[1] Such work as that of Bales and associates,[2] Festinger and Hutte,[3] and Hurwitz and associates[4] also provides evidence of relationships between status organization and communication patterns.

The present paper reports an exploratory analysis of the relationship between a changing social structure and the communication of a message. The central problem is the attempt to determine to what degree the communication network was related to the sociometric hierarchy as both structures developed in natural social settings.

OBSERVATIONAL SETTING

The following analysis is concerned with the person-to-person diffusion of a single message through populations of boys between the ages of twelve and fifteen who were attending a summer camp. Each ten-day camp period was devoted to boys from a different YMCA area. Thus there was a complete population change every eleven days, resulting in five different camper populations. The first, third, and fifth camper groups were selected as the "experimental" populations. However, owing to administrative difficulties, complete sociometric data were not obtained for the fifth group; therefore, the analysis was based on the first population (Study I, $N = 43$) and the third population (Study II, $N = 60$).

A sociometric questionnaire was administered to the populations one day after their arrival at the camp. From this questionnaire the social structure of the population was determined in terms of expressed preferences for residence, leadership, and intimate associates. On the basis of this information, certain boys were selected to act as message "starters." In each study the starters included a sociometric star, an isolate, and an individual of the median sociometric position.

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[1] Muzafer Sherif, *An Outline of Social Psychology* (New York: Harper & Bros., 1956), p. 226.

[2] Robert F. Bales *et al.*, "Channels of Communication in Small Groups," *American Sociological Review,* XVI (August, 1951), 461–68.

[3] Leon Festinger and H. Hutte, "An Experimental Investigation of the Effect of Unstable Interpersonal Relations in a Group," *Journal of Abnormal and Social Psychology,* XLIX (1954), 513–22.

[4] J. R. Hurwitz *et al.,* "Some Effects of Power on the Relations among Group Members," in D. Cartwright and A. Zander (eds.), *Group Dynamics* (Evanston, Ill.: Row, Peterson & Co., 1953), pp. 483–92.

The starters were assembled, and the camp director gave each a yellow celluloid pin on which was printed in black block lettering a large question mark and the name of the camp. The director told the starters the following:

> Here is a special pin. It is important that you wear it today. We have a few more of them but not enough for all the campers. Those campers who find out about this and come to the "Old Lodge" will also get a pin as long as our supply lasts. Remember, it is important that you wear it today, and remember that we don't have very many pins.

When a camper learned of the pins and came in search of one, he was asked who told him about the pins and what he had been told. All conversations between the boys and the observers took place in an informal setting and were tape-recorded. At the close of each conversation the boy was given a pin without further explanation of its purpose, and he, in turn, became an additional possible source of information.

A second sociometric questionnaire, asking the same questions as the first but posed around the possibility of returning to camp the following year, was administered on the day following the message-diffusion situation.

With the diffusion of the message considered the "experimental" situation, the design called for the following sequence of procedures: (*a*) administration of a pre-experimental sociometric questionnaire on the second day of the camp period; (*b*) selection of message starters on the basis of this sociometric information; (*c*) observation of the communication pattern on the eighth day of the camp period; and (*d*) administration of a postexperimental sociometric questionnaire on the ninth day.

INITIAL STRUCTURE OF THE TEST COMMUNITIES

The basic social ingredients of the two communities were identical in certain respects but quite different in others. Both camp periods were organized around the same set of tasks, which were regulated by a common set of rules enforced by the same formal machinery. Furthermore, these all-male populations were relatively comparable in terms of age, ethnicity, religious affiliation, and socioeconomic background. Thus, any contrast noted in the behavior of the two communities is not likely to be accounted for in terms of differences in social background or general community function. However, some differences did exist in terms of population size, number of residential subgroupings, previous acquaintance of the members, and certain sociometric interconnections.

Each boy was given a score on each of the following indexes:[5]

1. *Previous acquaintance.* The number of boys named in response to the question, "Name the campers whom you knew *before* coming to camp."
2. *Sociability.* The number of choices made in response to the question, "Please name the seven boys out of the whole camp whom you would *most* like to have as cabin mates."
3. *Popularity.* The number of choices received in response to Question 2 above.
4. *Prestige.* The number of choices received to the following two questions: (*a*) "What boy would you *most* like to have represent your cabin on the camp council?" (*b*) "Please name the two campers in your cabin that you would *most* like to sit next to at campfire."

All these questions were formulated around camp activities that were meaningful to the boys. However, a boy's score on previous acquaintance, sociability, and popularity could be a product of community-wide scanning, while the prestige score had a narrower social base, since choices were limited to cabin mates.

What were the major points of contrast between the two communities? The difference in the mere *number* of associated individual affords one distinction. The Study I community included 43 boys organized into six residential subgroups, while Study II involved 60 boys in eight residential groupings. Not only was the Study II community larger but it had less basis for integration in terms of *previous acquaintance*. The 43 boys in Study I knew, on the average, significantly more of their peers before coming to camp than did the 60 boys in Study II (2.8 versus 1.4).

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[5] The details concerning definitions, scoring, and intercorrelational analysis of the following may be found in Otto N. Larsen, "The Mechanics and Effects of Direct and Socially Mediated Channels of Contact in Message Diffusion" (unpublished Ph.D. dissertation, University of Washington, 1955).

The pattern of previous acquaintance apparently was the basis for other differences in the initial sociometric structures of the two communities. In Study I the correlation between *previous acquaintance* and *popularity* was .83. In Study II these two measures were practically uncorrelated ($r = .03$). Thus the initial structure of the smaller community seems to have been more influenced by social relations developed prior to the camp period than was that of the larger community.

Another difference was found in terms of the relationship between *sociability* and *popularity*. The correlation between these two measures in Study I was .41. In Study II the correlation was .12. This contrast is interpreted as a further indication that the smaller community, with its more extensive previous acquaintance relationship, was initially organized around a more structured set of reciprocities than was the case for the Study II community. The latter community is seen as beginning its camp life under circumstances more nearly approximating the "transitory togetherness situation" described by Sherif.

THE CHANGING SOCIOMETRIC STRUCTURES

Both populations evidenced an increase in *sociability* during their respective camp periods, but the over-all increase was greater in the small community than in the larger one. Thus, there was a 39 per cent increase in the number of choices made in Study I and a 26 per cent increase in Study II. The correlation between *sociability* scores at the opening and closing of camp was .50 in Study I and .34 in Study II—a finding that may be interpreted as reflecting the greater initial structuring of the smaller community and may also be in part a function of the larger size of the Study II community.

The increases in sociability had the net effect of making certain aspects of the two sociometric structures more alike at the close of the camp periods than at the beginning. For example, the mean *sociability* scores increased in Study I from 3.3 to 5.3, while the increase in Study II was from 4.0 to 5.0. The same equalizing trend was noted in the *prestige* scores. The increase in the mean number of choices made in Study I was from 2.3 to 2.5, while in Study II the increase was from 1.8 to 2.3. Such data suggest that conditions linked with time in the common social milieu had an equalizing influence on the structures of the two communities. In other words, we may hypothesize that newly formed groups, different in original composition with regard to size and previous association, confronted with a similar functional environment, tend in the course of time to develop relatively similar patterns of structural relationships.

The findings of the sociometric analysis raise certain problems when we turn to the consideration of the communication patterns that were observed. Originally, we desired comparable situations within which the communication study could be replicated. Theoretically, the findings suggesting that the Study I community was more structured at the beginning of its camp life than the Study II community would lead us to predict that the influence of structure on the communication network would be greater in Study I. However, the findings also suggested that the two communities became increasingly similar as a result of the camp experience. From this the following predictions may be deduced: (1) there should be similarities in the communication patterns of the two communities and (2), where differences occur, they will be in a direction which indicates a stronger influence of social structure in the Study I situation.

COMPARATIVE PATTERNS OF DIFFUSION

Figures 1 and 2 depict the channels of information that developed in the two studies by showing how the information spread from the starters. The numbers in the squares merely identify a given boy within a cabin.

In Study I the low-status starter in Cabin B told the message to four persons, who, in turn, told thirteen others. In all, then, 50 per cent of the total diffusion was linked to the low-status starter. The middle-status starter in Cabin A also told the message to four persons, and this led to twelve additional tellings (47 per cent of the total diffusion is thus linked to the middle-status starter). The high-status starter in Cabin C passed the message to only one person, with no further transmissions stemming from the latter individual. Furthermore, of the six boys who did not indicate that they received the message, four lived in the cabin with the high-status starter.

Five message starters were selected in Study II.[6] The low-status starter in Cabin A told the message to two other boys, but no further tellings resulted. The low-status starter from Cabin G also told two other boys, but these two boys transmitted the message to eight others. In total, 24 per cent of the diffusion can be linked to the low-status starters. The single middle-status starter (Cabin H) told five boys (10 per cent of the total diffusion). The high-status starter in Cabin C told the message to three boys, with no further transmissions. The other high-status starter (Cabin E) also told the message to three boys. However, from this start there followed a considerable chain reaction—thirty of the total of fifty transmisisons being linked to this one high-status starter. By reference to Figure 2, it may be seen that the lines of communication originating from the high-status starter in Cabin E extend into all the residential subgroups of the camp community. A paradoxical aspect of this pattern is that three of the total of five boys who did not indicate knowledge of the message lived in the cabin with this high-status starter. Thus in both studies, while there were only a few non-participants, the majority of them lived in a cabin with the high-status starters. In Study II, however, 66 per cent of the total diffusion can be linked to the two high-status starters.

Were these communication patterns related to or influenced by the sociometric patterns that had been previously measured? To answer this question a procedure was employed to test the null hypothesis that sociometric structure has *no relationship* to communication patterns. If the null hypothesis is true, then the probability of individual A telling the message to individual B, with whom he was linked sociometrically, would be the same as the probability of his telling C, with whom he was not linked sociometrically. If this is the case, then the expected proportion of the total telling that would occur between sociometrically linked pairs is the ratio of the number of possible teller-hearer pairs characterized by sociometric linkage to the total number of possible interacting pairs. The proportions so obtained are the "expected" proportions of telling between sociometrically linked pairs, assuming the null hypothesis is true. These expected proportions can be compared to the observed proportions of telling that occurred between members who were sociometrically linked. If the observed proportion of telling is significantly larger than the expected proportion, then it can be concluded that the influence of the particular variable being considered resulted in a significant departure from the null condition. In other words, the question that is being asked is: "Is it more probable for an individual to tell a message to a person he sociometrically prefers than it is for him to tell a message to any chance individual?" The results of this analysis are shown in Table 1.

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[6] In order to meet certain requirements for the study of time factors, the number of boys selected as starters varied in the two studies, but the percentage of the population selected was relatively constant—7–8 per cent. For the detailed analysis of the time factors operative in these studies see Richard J. Hill, "Temporal Aspects of Person-to-Person Message Diffusion" (unpublished Ph.D. dissertation, University of Washington, 1955).

On the basis of this analysis, it can be concluded that potential communication channels were more likely to become active if there were sociometric linkages between communicating individuals than if no such linkages existed.[7] Having established this,

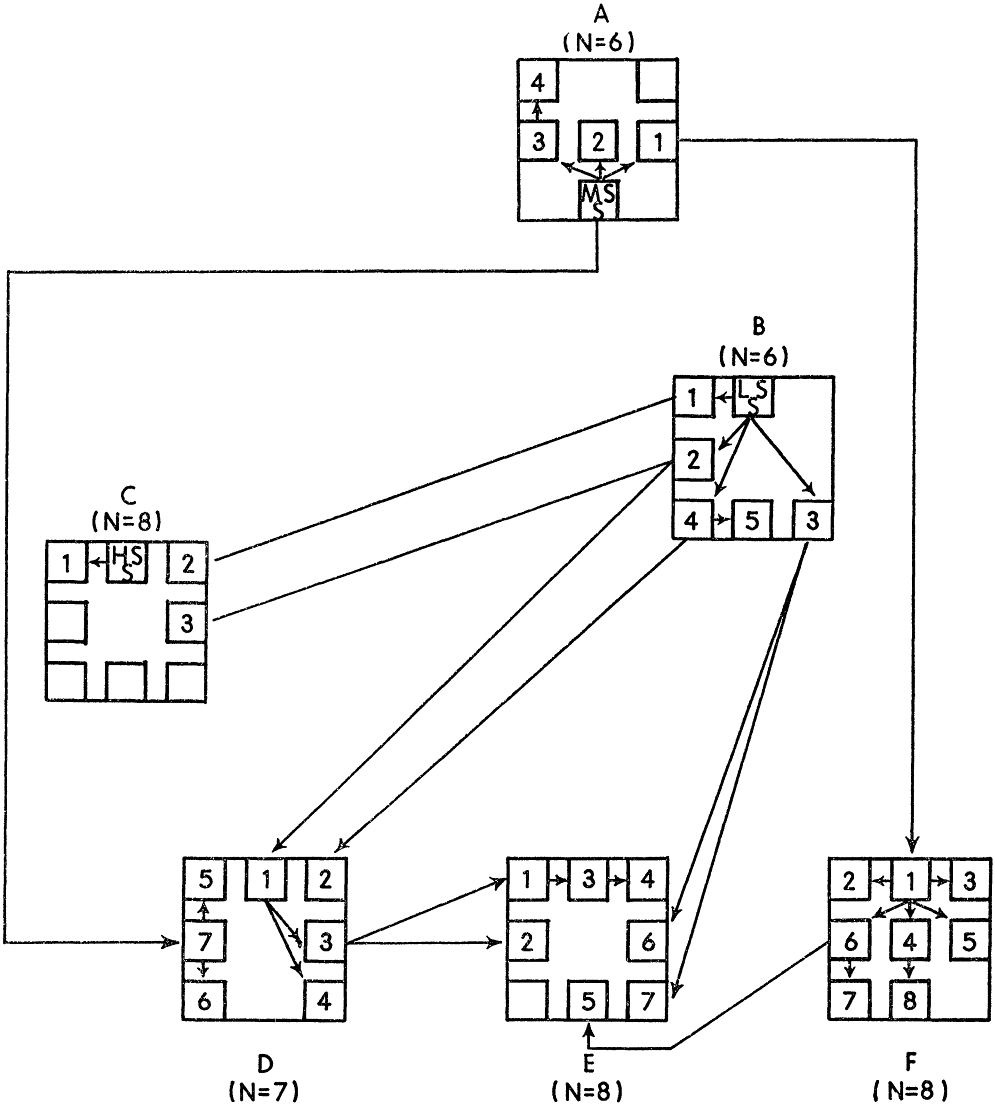

FIG. 1.—Message diffusion within and between groups, Study I. *Legend:* L.S.S. = Low-Status Starter; M.S.S. = Middle-Status Starter; H.S.S. = High-Status Starter; blank squares = non-participants. Total $N = 43$. Groups A through F also represent cabin residences placed in their relative physical camp locations.

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[7] It would have been desirable to analyze certain compound relationships (e.g., between telling and preference as both cabin mate and leader). However, the joint probabilities involved became so small as to make such analysis unwarranted.

we can now turn to the comparison of the two communication patterns.

The general patterns of diffusion in the two studies were similar in terms of the *amount of diffusion* and the *average number of tellings per transmitter*. In Study I, 85 per cent of the total non-starter population heard the message and complied by calling for a pin and being interviewed. In Study II the corresponding figure was 90.9 per cent. The difference between these two percentages is not significant.[8]

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[8] In discussion of significance the .05 level has been used throughout this paper.

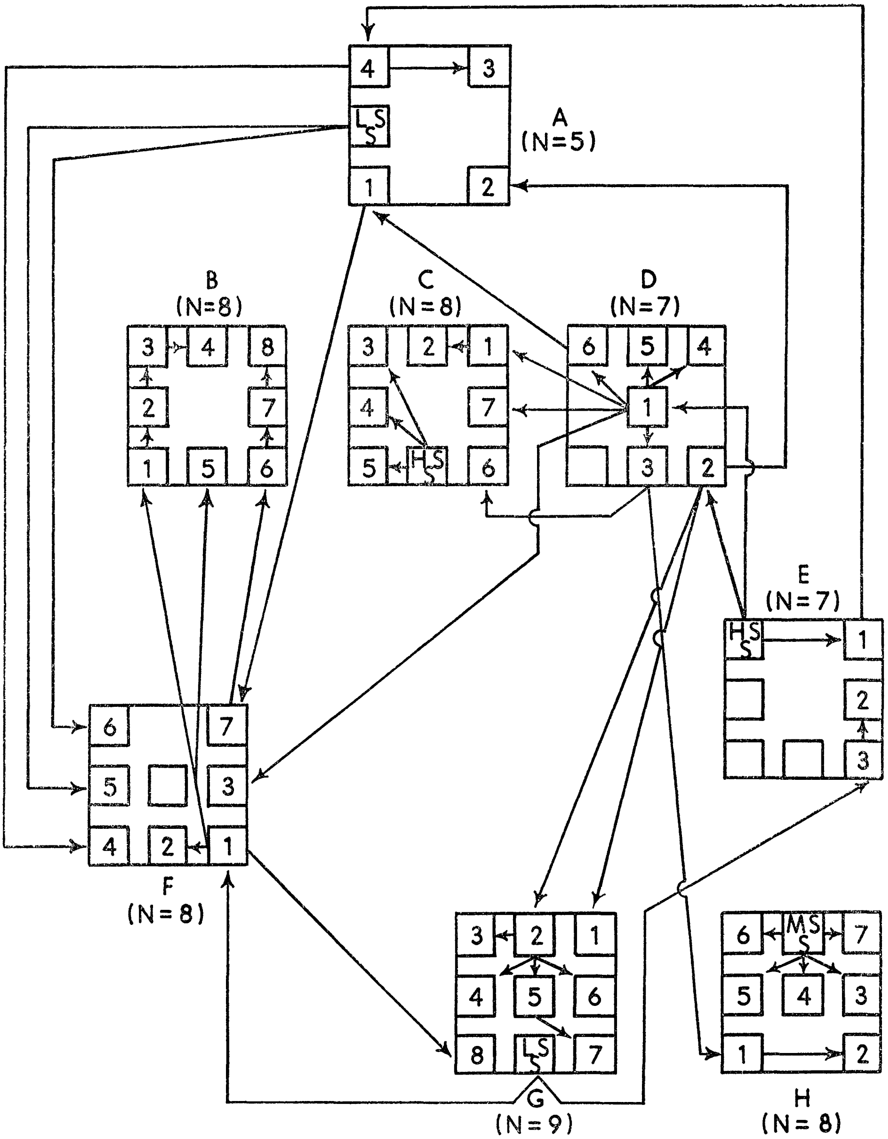

FIG. 2.—Message diffusion within and between groups, Study II. *Legend:* L.S.S. = Low-Status Starter; M.S.S. = Middle-Status Starter; H.S.S. = High-Status Starter; blank squares = non-participants. Total $N = 60$. Groups A through H also represent cabin residences placed in their relative physical camp locations.

In Study I, 17 transmitters told the message a total of 34 times, for an average of 2.0 tellings per transmitter. In Study II, the average was aproximately the same, with 24 transmitters telling the message a total of 50 times, or 2.08 tellings per transmitter.

Another similarity in the two over-all diffusion patterns can be seen by comparing the relative number of persons in the various communication roles.[9] Table 2 shows the distribution of communication roles in the two studies.

TABLE 1

INFLUENCE OF SOCIOMETRIC VARIABLES ON MESSAGE DIFFUSION

	Proportion Both Naming and Telling			
	Study I		Study II	
Sociometric Variable	Expected	Observed	Expected	Observed
Residential preference..........	.088	.382*	.130	.375*
Intimate associate.............	.040	.118*	.036	.146*
Leadership preference..........	.021	.029	.021	.062*
Previous acquaintance..........	.077	.265*	.048	.083

* Observed proportion significantly larger than the expected proportion at the .05 level.

Another aspect of the community structure was the fact of common residence or physical propinquity. To get some indication of how this factor might have operated, the message was defined as an "in-group" telling when it was transmitted between two boys from the same residential subgroup. Conversely, when the transmission involved boys from different cabins, it was called an "out-group" telling. If the relationship of this aspect of structure to the communication network was greater in Study I than in Study II, we would hypothesize more in-group transmission in the Study I instance. While the percentage of in-group telling was greater in Study I (67.6 per cent) than in Study II (56.0 per cent), the difference was not statistically significant.

The analysis of the time-growth patterns shows that the message moved at somewhat different rates through the two populations. In both studies the diffusion took place within a two-hour period which had been set aside by the camp officials, at the request of the researchers, as free from all organized camp activity. Within this period, however, the boys reacted to the message somewhat more rapidly in Study II than in Study I. In Table 3 the growth processes are shown in terms of the cumulative percentage of knowers who complied with the message by fifteen-minute intervals during the two-hour diffusion experience. About 8 per cent of the boys complied within the first fifteen minutes in both studies, but then the greatest difference between the growth rates of the two studies occurred. By the end of the first half-hour, 24.3 per cent of the ultimate compliers responded in Study I, while 45.6 per cent had responded in Study II.

TABLE 2

DISTRIBUTION OF COMMUNICATION ROLES*

	Study I		Study II	
Role	*N*	Per Cent	*N*	Per Cent
Transmitter...	17	39.5	24	40.0
Non-participant.......	6	14.0	5	8.3
Receiver......	20	46.5	31	51.7
Total......	43	100.0	60	100.0

* At the .05 level there are no significant differences between the two studies in the percentages of persons occupying corresponding communication roles.

The earlier or more rapid spread of the message in Study II can be interpreted in terms of the structural conditions previously discussed. To the degree that status considerations tend to inhibit the use of certain interpersonal communication channels, the stronger these considerations, the less rapid would be the spread of information. In the communication situations here reported, the spread of information probably would have been most rapid if information was passed on every time a knower met a non-knower. To the degree that status considerations prevented certain potential channels from becoming active, the communication process would have been slowed down. If this was the case, then we would expect the information to have spread less rapidly in the more firmly structured Study I community.

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[9] These roles were defined as follows: *transmitters*—persons who heard the message, complied by requesting a pin, and then went out and told others; *receivers*—persons who heard the message and complied by requesting a pin but who did not transmit the message further; *non-participants*—persons who did not comply by requesting a pin and who were not credited with telling anyone the message.

TABLE 3

CUMULATIVE PERCENTAGE OF COMPLIANCE WITH THE MESSAGE

ELAPSED TIME IN 15-MINUTE INTERVALS	CUMULATIVE PERCENTAGE Study I	Study II
1	8.1	8.8
2	24.3	45.6
3	48.6	56.1
4	70.2	71.1
5	83.7	85.9
6	91.8	91.2
7	97.2	94.7
8	100.0	100.0

In an attempt to determine the *direction* of the flow of information through the two status structures, the comparative scores of the teller-hearer pairs were examined. Table 4 presents the data on the flow of information through the *popularity* structure. Only in Study I was the flow of information in the direction consistent with the Sherif conclusion discussed in the opening paragraph of this paper. This, of course, is consistent with the interpretation that Study I had a more mature social structure than did Study II. However, existing theory does not seem to explain the tendency toward a "down-status polarity" of the communication pattern observed in Study II. In an attempt to explain this discrepancy, the data were examined from the point of view of the *changes* that took place in the status of the teller-hearer pairs between the opening and closing of the camp. To what extent was the information passed between persons whose status changed in the same direction, either upward or downward?

In Study I, 61.7 per cent of the telling took place between persons whose popularity status *changed in the same direction.* In Study II the corresponding figure was 48 per cent. Thus, when the transmitter-receiver relationship is evaluated in terms of *social mobility* or change in status rather than in terms of status at a given point of time, it decreases the observed degree of differentiation in interaction or increases the observed degree of like-status persons interacting with each other. We hypothesize that this is a more valid estimate of the manner in which status considerations guide the passing of valued bits of information. That is, the individual is conscious of the dynamic nature of status in this kind of setting, and perhaps the emphasis is not on what a potential receiver's status is at a given point of time but on where the transmitter perceives the receiver to be moving, in terms of status, relative to the transmitter's own status in the community.

TABLE 4

THE POPULARITY STATUS RELATIONSHIP BETWEEN HEARERS AND TELLERS IN BOTH STUDIES*

DIRECTION OF THE TELLINGS	STUDY I N	STUDY I Per Cent	STUDY II N	STUDY II Per Cent
Up status	19	55.9	16	32.0
Same status	8	23.5	6	12.0
Down status	7	20.6	28	56.0
Total	34	100.0	50	100.0

* For 2 df, $\chi^2 = 10.4$, $P < .01$.

How do occupants of key communication roles perceive their own status in reference to their communicative activity? A final examination of another aspect of social mobility in both communities produced a regularity suggesting a hypothesis regarding this question. While the direction of the information flow through the status structures of the two communities was not consistent (Table 4), a consistency in status disposition was found for the transmitters and receivers in the two studies. When *changes* were compared in the mean sociability and popularity scores for transmitters as a class and receivers as a class, the trend was for the status of transmitters to *rise* while receivers *fell* in status accorded by their peers. At the same time transmitters decreased, while receivers increased, their sociability. Thus, in both studies, transmitters gained in popularity while decreasing in sociability; receivers lost in popularity while increasing in sociability. Possibly the telling of the message was a valuable enough social act to enhance differentially the status of the initiating agent—the transmitter. The hypothesis is suggested that transmitters—the key functionaries in a communication network—perceive the passing-on of valued information as an effective avenue for securing community-wide status recognition.

CONCLUSION

The findings of the present study are seen as consistent with the generalization that, the more stable and firm the social structure of a community, the greater the influence of that structure on interpersonal communication between community members. Certain differences noted in the communication patterns studied are consistent with this general relationship. However, the data also suggest that the dynamic or developmental aspects of status must be considered in addition to the more static structural factors if a thorough understanding of the relationship between communication and status is to be achieved. Further, the issue of the perceived importance of the communicative act has been raised. Additional research is needed in order to determine the relative importance of status position, status change, and status perception in determining the communication network operative in a given community.

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